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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/531,960

Applicant(s)

TRAMONTANA, FRANCESCO

Examiner

SAIF A. ALHIJA

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 April 2005.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-58 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-58 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 19 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/CD/CD)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-58 have been presented for examination.

PRIORITY

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 1-58 are rejected** under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

i) Claim 1 recites **"program simulates accurately the plant structure."** It is unclear how to determine the scope, metes, and bounds of **"accurately"** as it relates to the claim limitation. This renders the claims vague and indefinite.

ii) Claim 2 recites **"wherein the variables are univocally defined to represent."** It is unclear how to determine the meaning of **"univocally"** as it pertains to the claim limitation and further how to ascertain the resultant scope, metes, and bounds of the term. This renders the claims vague and indefinite. This further applies to all other instances of "univocally" or its variants.

iii) Claim 5 recites **"wherein the virtual image is univocally correlated to the logical engine."** It is unclear how to determine the meaning of **"univocally correlated"** as it pertains to the claim limitation and further how to ascertain the resultant scope, metes, and bounds of the phrase. This renders the claims vague and indefinite.

iv) Claim 7 recites **"associate relay graphic aspects that are univocally correlated to values assumed by said state and command variables."** It is unclear how to determine the meaning of **"values assumed by said state and command variables."** How are the values "assumed?" It is unclear how to determine the scope, metes, and bounds of the assumption as it relates to the claim limitation. This renders the claims vague and indefinite.

v) Claim 8 recites **"checking directly."** It is unclear what is meant by checking directly as opposed to the visual checking further recited in the claim. This renders the claims vague and indefinite.

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vi) Claim 8 recites **“non-identity.”** It is unclear how to determine the scope, metes, and bounds of non-identity in the context of the claims. This renders the claims vague and indefinite.

vii) Claim 15 recites **“wherein the additional program is generated through means different from the plant simulation software, and are wherein the additional program and the plant simulation software are compared so to verify that the additional program and the plant simulation software are identical.”** (Emphasis Added) It is unclear what is meant by this limitation. How is the plant command and control software identical to the simulation software of the plant if it is generated through different means? This renders the claims vague and indefinite.

viii) Claim 23 recites **“the railway plant.”** There is insufficient antecedent basis for this limitation in the claim.

Appropriate correction is required.

All claims dependent upon a rejected base claim are rejected by virtue of their dependency.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(c) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 1, 3-4, 14-15, 29, 31-32, and 58 are rejected** under 35 U.S.C. 102(b) as being clearly anticipated by **Donne et al. “Application of Modern Methods in Power Plant Simulation and Control”**, hereafter **D.**

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Regarding Claim 1:

The reference discloses A device for checking software engine for controlling and commanding a plant, the device comprising:

at least a computer having at least a central processing unit and at least a memory for loading and executing programs; **(D. First paragraph, ACSL/MMS)**

a logical engine for commanding the plant, the logical engine being loadable in the at least a memory for the execution of the logical engine, the logical engine providing control and command signals; **(D. Page 77, right column, “full plant controllers”)**

a plurality of operating units capable of **(Claim Interpretation. The Examiner notes that the phrase “capable of” does not constitute a positive recitation of a limitation and therefore the elements following this term are not afforded patentable weight. In the interests of compact prosecution the limitations following the phrase have been cited in the prior art. This interpretation applies to all other instances of this phrase.)** actuating detecting, measuring, and signaling, the plurality of operating units being further capable of receiving command signals and of transmitting control signals about the operating condition of the plant, the logical engine reading the control signals provided by the plurality of operating units and processing the command signals according to an operation protocol of the plant, **(D. Page 77, left column, “control system and component interaction”)**

wherein a plant simulation software is stored in the memory, **(D. First paragraph, ACSL/MMS)**

wherein the plant simulation software is designed to be controlled and commanded by the logical engine **(D. First paragraph, ACSL/MMS)**

wherein the plant simulation software is loadable and executable by the at least a computer, and **(D. First paragraph, ACSL/MMS)**

wherein the plant software simulation program simulates accurately the plant structure and the operating modes of the plurality of operating units provided in said plant. **(D. Page 79, Discussion, first paragraph, accurate model)**

Regarding Claim 3:

The reference discloses The device according to claim 1, further comprising means for displaying an image of plant behavior, wherein the means for displaying are controlled by the logical engine as variable lists univocally associated to the plurality of operating units as report files, and wherein the report files list one or more of the plurality of operating units and the associated state and command variables (**D. First paragraph, individual component models**)

Regarding Claim 4:

The reference discloses The device according to claim 1, wherein the plant simulation software comprises means for setting starting operating conditions of the plant and means for simulating anomalous situations of plant operating units, in order to check the reaction of the plant to the anomalous situations. (**D. Page 78, Using the Dynamic Model, testing accuracy of model to test scenarios**)

Regarding Claim 14:

The reference discloses The device according to claim 1, further comprising means for connecting and interfacing with a validation and certification system that is based on a system different from the logical engine for generating command and control signals. (**D. First paragraph, CHP, ACSL, MMS, integration**)

Regarding Claim 15:

The reference discloses The device according to claim 14, wherein the validation and certification system comprises an additional program for generating control and command logical signals generated and memorized in the validation and certification system, wherein the additional program is generated through means different from the plant simulation software, and are wherein the additional program and the plant simulation software are compared so to verify that the additional program and the plant simulation software are identical. (See 112 2nd rejection above. Claim is interpreted as analogous to claim 14. See rejection for claim 14)

Regarding Claims 29, 31, and 32:

See rejection of claims 1, 3, and 4 respectively.

Regarding Claim 58:

See rejection of claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim(s) 2, 5, 23-28, 30, 33, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over **D** in view of **Hamadou et al. U.S. Patent Publication No. 2002/0059050 A1, hereafter H.**

Regarding Claim 2:

D does not explicitly disclose The device according to claim 1, wherein the plant simulation software comprises Boolean algorithms including variables, and wherein the variables are univocally defined to represent the control signals of different state and operating conditions of the plurality of operating units, and the command

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signals for commutating and maintaining the different state and operating conditions of the plurality of operating units.

However H discloses The device according to claim 1, wherein the plant simulation software comprises Boolean algorithms including variables, and wherein the variables are univocally defined to represent the control signals of different state and operating conditions of the plurality of operating units, and the command signals for commutating and maintaining the different state and operating conditions of the plurality of operating units. **(H.**

Figure 6b)

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the Boolean aspect of machine control shown in H for the plant simulation of D since Boolean machine control is a well known and widely used method of controlling even the simplest machines in a system and therefore the algorithms the simulation would use to control the signals would in turn be Boolean.

Regarding Claim 5:

The reference discloses The device according to claim 1,
wherein a plant component is one of the plurality of plant operating units, a predetermined element of the plant, a predetermined area of the plant, to or the whole plant, **(D. First paragraph, ACSL/MMS)**

wherein each plant component is univocally correlated to a predetermined value of a variable relevant to the operating condition of the plant component and of a command variable for managing the operating state of the plant component. **(D. First paragraph, ACSL/MMS and CHP)**

D does not explicitly disclose wherein each plant component can be univocally associated to a virtual image,

wherein the virtual image is generated by a graphic program loadable and executable by one of the at least a computer,

wherein the virtual image is univocally correlated to the logical engine,

wherein the graphic program is capable of generating several graphic aspect conditions of each plant component.

However H discloses wherein each plant component can be univocally associated to a virtual image, (**H. Figure 3, S1-SN**)

wherein the virtual image is generated by a graphic program loadable and executable by one of the at least a computer, (**H. Figure 3, S1-SN**)

wherein the virtual image is univocally correlated to the logical engine, (**H. Figure 3, S1-SN**)

wherein the graphic program is capable of generating several graphic aspect conditions of each plant component. (**H. Figure 3, S1-SN**)

It would have been obvious to one of ordinary skill in the art at the time of the invention to graphically display plant components as per H for the plant in D for user interface simplicity.

Regarding Claim 23:

The reference discloses The device according to claim 1, further comprising a network interface, wherein the device comprises a non-vital node of the railway plant, and wherein the device further comprises means for quickly modifying the control and command logical program and for virtually validating the same. (**D. Page 75, paragraph 2, optimal tuning**)

Regarding Claim 24:

The reference discloses The device according to claim 23, wherein the device, is capable of operating as a diagnostic and supervisory tool of the proper operation of the plant, and wherein the device reproduces a simulated plant simulating the actual plant in a desired state condition, the device further comprising a comparator between the state condition assumed by the plant and the state condition assumed by the simulated plant. (**D. Page 79, Discussion, modeling on a real CHP plant**)

Regarding Claim 25:

The reference discloses The device according to claim 23, wherein the device is capable of simulating emergency interventions before their applications to the plant, and wherein in an emergency situation it is possible to simulate several intervention and command possibilities to be executed on the plant, thereby indicating the

optimal choice among the intervention and command possibilities. (D. Page 75, paragraph 2, optimal tuning)

Regarding Claim 26:

The reference discloses The device according to claim 1, further comprising tools for executing simulating functions with a user interface of the type used by a desired computer operating system, thereby providing an operator with operating windows having function buttons, quick choice menus and other functionalities typical of said user interface, in addition to the use of a pointing system, selection and command input systems, and a keyboard to input numerical data, the operating windows providing graphic images of operating units, relays, and other parts of the plants. (D. Figure 14, GUI)

Regarding Claim 27:

The reference discloses The device according to claim 1, further comprising means for setting specific operating conditions of the plant and anomalous situations in the plant, and further for checking the changes in operating conditions in the plant according to different operating environments. (D. Figure 14, Control Loop Tuning)

Regarding Claim 28:

The reference discloses The device according to claim 27, wherein manually setting means are provided to an operator of the device, wherein the manually setting means impose, at the starting of the cycle for executing control and command signals, specific state conditions to the plurality of operating units, wherein conditions may be provided that cause one or more of the plurality of operating units to operate anomalously, and wherein the one or more of the plurality of operating units operate anomalously by operating incorrectly or by failing to operate. (D. First paragraph, data input via MMS graphical user interface)

Regarding Claims 30 and 33:

See rejection for claims 2 and 5 respectively.

Regarding Claim 57:

See rejection for claim 26.

Allowable Subject Matter

6. **Claims 6-13, 16-22, and 39-56 are objected** to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims as well as resolving all intervening issues such as the 112 2nd rejections provided. Reasons for allowance will be held in abeyance

Examiners Remarks

7. i) Examiner has cited particular columns and line numbers in the references applied to the claims for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

ii) The Examiner respectfully requests, in the event the Applicants choose to amend or add new claims, that such claims and their limitations be directly mapped to the specification, which provides support for the subject matter. This will assist in expediting compact prosecution.

iii) Further, the Examiner respectfully encourages Applicants to direct the specificity of their response with regards to this office action to the broadest reasonable interpretation of the claims as presented. This will avoid issues that would delay prosecution such as limitations not explicitly presented in the claims, intended use statements that carry no patentable weight, mere allegations of patentability, and novelty that is not clearly expressed.

iv) The Examiner also respectfully requests Applicants, in the event they choose to amend, to supply a clean version of the presented claims in addition to the marked-up copy in order to avoid potential inaccuracies with the version of the claims that would be examined.

Conclusion

8. All Claims are rejected.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Saif A. Alhija whose telephone number is (571) 272-8635. The examiner can normally be reached on M-F, 11:00-7:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on (571) 272-2279. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. *Informal or draft communication, please label PROPOSED or DRAFT*, can be additionally sent to the Examiners fax phone number, (571) 273-8635.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SAA

/Kamini S Shah/
Supervisory Patent Examiner, Art Unit 2128

May 7, 2009